Range Safety Independent Assessments

NASA headquarters has the responsibility for conducting independent process verification reviews at NASA centers and ranges to ensure, among other things, the mitigation of operational, health, and system hazards. Reviews also include compliance with laws, executive orders, publications and standards, local operating procedures, and special interest items that pertain to the center or range.

In response to this requirement, the NASA Range Safety Manager (located at KSC) participated in three independent assessments in 2005: Dryden Flight Research Center Range Safety Systems Office, range safety related activities at Johnson Space Center, and the Wallops Flight Facility Range Safety Office.

Dryden Flight Research Center Range Safety Systems Office

The first assessment was an Institutional/Facility/Operational safety audit at Dryden Flight Research Center from 31 January to 4 February 2005. One of the ten focus areas of the review included range safety.

Objectives of the Assessment

The range safety portion of the assessment had three major objectives. The first objective was to follow up on a 2002 independent assessment of the Dryden's Range Safety Systems Office. While a number of corrective actions from the 2002 assessment were still open, most were closed by the end of the 2005 visit.

The second objective involved reviewing the Range Safety Systems Office flight analysis function. To perform flight analysis and support flight projects, the flight analysis function must make use of specialized software tools and/or mathematical calculations. These tools, such as Interim Mission Hazard Assessment Tool and Joint Advanced Range Safety System, and data spreadsheets support mission analysis and design of range safety systems. The assessment team evaluated the following:

- Pre-mission and real-time decision models, algorithms, calculations
  - Certification status of operational software/models
  - Adequacy of models to address various flight situations
  - Need for and status of new tools under development
- Training for analysts using the software tools

A third objective was to review the Dryden Flight Research Center/Air Force range safety interface. The NASA Dryden Flight Research Center is a civilian aeronautical test center located on Edwards Air Force Base. The commander of the Air Force Flight Test Center at Edwards is responsible for local range safety.

The commander traditionally has accepted Dryden's independent range safety review process as a means for ensuring this responsibility. The assessment team evaluated the following:

- Dryden Flight Research Center interaction with Air Force range safety counterparts
- Dryden Flight Research Center/Air Force Flight Test Center interoperation support
- Air Force/Range Safety Systems Office roles in the Airworthiness and Flight Safety Review Board process

Johnson Space Center Range Safety Related Activities

The second assessment involved a weeklong Institutional/Facility/Operational safety audit of Johnson Space Center in early April 2005.

Objectives of the Assessment

The two primary objectives of the range safety review at Johnson Space Center were as follows:

- Evaluation of Johnson Space Center plans regarding implementation of the draft policy and requirements of NPR 8715.5, *Range Safety Program*
- Evaluation of the public risk assessment tools used to determine the public risk levels incurred as a result of vehicle entry and support entry decision-making

Wallops Flight Facility Range Safety Office

The NASA Range Safety Manager selected Wallops Flight Facility for the third assessment, conducted from 19 April to 21 April 2005.

Objectives of the Assessment

The NASA Range Safety Office had conducted an independent assessment of the facility's Range Safety Office in 2002 so one objective of the assessment was to review the status and content of the 2002 corrective actions. The review found no open corrective action items from the previous assessment. All items were in compliance with governing directives.

Other objectives focused on evaluating the three following primary areas:
- Management of the range safety ground systems
- Range safety ground system operations
- Range safety ground system hardware and software

Through these independent assessments, the NASA Range Safety Office maintains the baseline of the range safety organizations, determines the compliance or non-compliance of specific requirements, and monitors all open action items to completion. These independent assessments also continue to highlight exemplary performance and to provide an opportunity to enhance range safety programs.